CAPE COD SCHOOL PESTICIDE USE SURVEY MID-TERM REPORT

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Executive Summary

A mid term report of the Cape Cod School Pesticide Use Survey points out the need to adopt Integrated Pest Management (IPM) practices in schools. Only one town is presently utilizing IPM to any extent. IPM is recommended by the EPA, National PTA, and American Lung Association to reduce the exposure of children to toxic pesticides.

IPM practices can be considered common sense pest control. Under IPM programs populations of pests are monitored and least toxic solutions are found to eliminate pest problems. Solutions may include filling cracks, removing sources of food and water, forming healthier soil systems on school grounds to resist weeds, and numerous other non chemical practices. As a last resort the least toxic chemical may be utilized and applied in the manner that exposes children to the chemical the least. Often baits or traps placed in inaccessible locations are used rather than spraying of chemicals that remain in the air and on surfaces for long periods after application

IPM is especially important in schools because children are more vulnerable to the adverse effects of pesticides. Children are smaller than adults and smaller amounts of toxins represent a higher dose per unit body weight. The immune and defense systems of children are not fully developed. Children's behavioral habits of playing on the ground (and the floor) and putting objects into their mouths, expose them to more toxins than adults in the same environment.

Cape Cod schools are utilizing a range of pesticides that include nerve toxins, carcinogens, and fetotoxins. Some of the pesticides applied may have effects on the liver, kidney, heart, respiratory system (including asthma), hormonal system, or nervous system.

100% of schools districts applied pesticides outside on schools grounds and inside school buildings. Inside buildings pesticides were applied by custodians in 62% of the schools and by contractors in 75% of the schools. 50% of schools used both custodians and contractors to apply pesticide.

25% of schools employed contractors to apply pesticides indoors on a routine basis, either once per month or once every two months. This practice of applying pesticides to prevent infestation needlessly exposes children to toxic chemicals for no worthwhile reason and is contrary to recommended IPM policies.

None of the school systems notify parents when pesticides are to be applied. The EPA, National Parent Teachers Association, and American Lung Association all recommend that schools notify parents.

Half of schools do not notify teachers when pesticides are to be applied. The schools that do notify teachers often do not notify them consistently.

In most situations, areas are not posted with warning signs when pesticides are applied. Indoors 62% of schools do not post warning signs. Outdoors 50% of schools do not post warning signs. Without posting warning signs children will be exposed to pesticides by occupying areas that have recently been sprayed.

Clearly we can do better to protect Cape Cod children within schools. Our situation is not unique-many school systems around the country and the state had similar problems until IPM practices were adopted and a conscious decision was made to reduce children's exposure to these potentially harmful toxins.

The purpose of the survey and the reports is not to point fingers at school districts but rather to help them develop comprehensive IPM policies and thereby eliminate a potential health problem..

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Various communities across the nation have questioned the commonplace and widespread use of pesticides in and around their schools. Surveys in Mass. and NY indicate that the vast majority of schools used pesticides regularly with only limited precautions. In a survey of people who attended our April "Ounce of Prevention" conference here, pesticide use reduction in schools was by far the number one area of interest and concern. Further discussion with one of our members who had experience with an inappropriate use of pesticide at her son's school, led GreenCAPE to conduct a survey of pest control practices in Cape Cod public schools. A survey would help us judge the magnitude of the problem and look at the potential for instituting safer pest control methods that would ensure the protection of our children's health.

The Special Susceptibility of Children

Toxic by design, pesticides may not only affect target pest populations, but also threaten children's nervous, endocrine, immune, and reproductive systems. Following conception, a child's susceptibility to pesticides changes as organ systems grow and certain functions mature, such as the detoxification potential of the liver or the filtration potential of the kidneys.

Children may be especially vulnerable to carcinogens during periods when their cells are reproducing most rapidly. Children may be more susceptible to loss of brain function if exposed to neurotoxins during critical periods of development--and this is borne out by radiation, drug, fetal alcohol, and lead studies. The reproductive system has special periods of vulnerability as well, both very early in life and later during puberty.

Childhood pesticide exposures in schools occur in addition to exposures in food, contaminated drinking water, lawn and garden products, pet care products, and home pest control products. So children's physiological susceptibility and their particular patterns of exposure are the dominant factors contributing to their heightened risk. The amount of time children spend within the school environment (6-7 hours/day; 180 days/year) guarantees that if schools become contaminated, there is potential for significant exposure and risk.

To quote from the National PTA School Pesticide Use Position Statement: "Our nation's children because of a variety of age-related factors, are at increased risk of cancer, neuro-behavioral impairment, and other health problems as a result of their exposure to pesticides".

Mid-Term Report on Survey

Of necessity, the data we have compiled so far can only be considered a "mid-term report" and not a final grade. Some school districts did not reply to our request for information though ample time was given (-3 months)-and Mass. public schools are responsible to comply with the Mass. Right-to-Know law. Many school districts replied but the survey forms were very incomplete and further efforts to pursue the missing information were not successful. Some school districts claimed to have lost the survey; they were forwarded another copy. We still trust that they have the best interests of the children in their care at heart, so we will continue to press this issue and hope for more complete data at a later time.

Summary of Survey Findings:

Surveys were delivered to 15 school districts/towns on Cape Cod and 8 (53%) responded.

The districts that have not yet returned survey information are: Bourne, Chatham, Falmouth, Harwich, Truro, and Wellfleet. Barnstable was contacted by phone; however their information is incomplete. GreenCAPE will be working with school districts/towns to help them complete their surveys in order to get a clearer picture of present use patterns as an aid in developing comprehensive IPM policies.

A brief overview of results from districts that responded:

Notification

No school districts/towns notify parents when pesticides are being applied.

50% of school districts/towns do not notify teachers at all when applying pesticides. Of the other 50% that does notify teachers at least half do not notify them consistently. One district notifies teachers "informally", another only when "when necessary".

Posting Warning Signs

62% of school districts/towns do not post areas with warning signs when applying pesticides indoors.

50% of school districts/towns do not post areas with warning signs when applying pesticides outdoors.

Pesticide Applications in School Buildings

62% of school districts/towns allow their custodial staff to spray aerosol cans of pesticides inside schools.

75% of school districts/towns contract with pesticide application companies to apply pesticides within school buildings. 34% of the contractors apply pesticides on a regular schedule of once per month or once every two months.

50% of school districts/towns both contract out pesticide applications in buildings and allow their custodial staff to spray aerosol cans of pesticides inside schools.

Pesticide Applications on School Grounds

100% of school districts/towns apply pesticides outdoors. 25% contract out exclusively. 13% apply pesticides exclusively with in-house staff. The remaining 62% utilize both in-house staff as well as contractors.

Integrated Pest Management

Only one district (or 12%) practices Integrated Pest Management in it's schools and then only inside the buildings, not on the grounds.

The remaining 7 (or 88%) do not practice Integrated Pest Management anywhere.

Mashpee is the only town that has a policy which one could call integrated pest management but only inside their facilities. Mashpee places sticky boards inside the critical areas in the buildings and only treats to eliminate pests if pests are present in sufficient numbers to be of concern. When treating for pests, efforts are made to use least toxic alternatives and generally baits and traps are used. A log is kept at each school where results of monthly monitoring are recorded along with any treatments required.

Pesticides Utilized in Cape Cod Schools & Their Health Effects

Pesticides used included: diazinon, chlorpyrifos, acephate, glyphosate, 2,4-D, clopyralid, MCCP, cyfluthrin, cypermethrin, permethrin, pyrethrum, bromodiolone and bendiocarb.

Of these, diazinon, chlorpyrifos and acephate act as nerve toxins. These organophosphate insecticides achieve their toxicity by interfering with the transmission of nerve cells. They damage insect nervous systems but can be toxic to human nervous systems as well. Organophosphate insecticides have been given top priority for reassessment by EPA due to their potential hazards. Signs of poisoning include headaches and dizziness (two symptoms often confused with childhood flu) as well as muscle weakness and incoordination, intestinal cramps, vision problems, and spasms of the bronchial tubes.

Acephate is another organophosphate that has been shown to be a fetotoxin, have hormonal effects, and can cause damage to the cardiac and nervous systems, eye problems, and respiratory effects.

2,4-D (one of the ingredients of Agent Orange) is the center of ongoing controversy due to its association with several kinds of cancer in humans.

Clopyralid may have effects on the liver, kidney and heart. This chemical can travel through soil and contaminate groundwater. Users have been advised not to apply clopyralid in sand or loamy sand soils.

MCPP. A study of people manufacturing MCPP found an association with 2 kinds of cancer.

Cyfluthrin is a skin and eye irritant in humans. It may cause itching, burning, or stinging progressing to a numbing effect and may last for up to 24 hours.

Cypermethrin has been classified by the United States Environmental Protection Agency as a possible human carcinogen.

Permethrin is a possible human carcinogen and is associated with respiratory problems such as asthma and bronchitis.

Pyrethrum is associated with allergic responses and respiratory problems such as asthma.

The rodenticide-Bromodiolone - acts as an anti-coagulant on rats -and humans.

Piperonyl butoxide acts as a synergist with various active ingredients. It delays metabolism of the active ingredient - in essence making it longer acting.

Some Symptoms of Pesticide Poisoning

Pesticide (trade name)	Category	Potential Health Effects From: *Recognition and Management of Pesticide Poisonings, USEPA.* Some effects are acute; some are chronic.
Chlorpyrifos (Dursban)	Insecticide	headache, nausea, dizziness, abdominal cramps, vision problems, persistent weight loss, toxic psychosis, convulsions.
MCPP (mecoprop)	Herbicide	skin irritation, vomiting, unconsciousness, coughing, dizziness, sensory and behavioral disturbances, spasms, sweating
Bendiocarb (Ficam)	Insecticide	diarrhea, muscle weakness, dizziness, headache, blurred vision, sensory and behavioral disturbances, spasms, sweating
Acephate (Orthene)	Insecticide	headache, flu-like symptoms, possible human carcinogen, reproductive effects, interferes with nerve impulse transmission.
Cypermethrin (Demon)	Insecticide	allergic dermatitis, flu-like symptoms
2,4-D	Herbicide	vomiting, diarrhea, anorexia, ulcers of the mouth and pharynx, damage to the liver, kidneys and central nervous system
Piperonyl butoxide	Synergist enhances "active ingredients"	may enhance toxic hazard of insecticides to humans, oncogen

Roundup--questions about this product come up very frequently. While it appears to have a low toxicity, it must be noted that it has not been tested for immune system effects or chronic neurotoxic effects or synergistic effects. There is still insufficient evidence at this time to classify it as to human carcinogenicity.

As recently as 1982 it was classified as an immobile herbicide but now data from Newfoundland and Labrador shows it can migrate through the soil and contaminate well water. It is banned in New Zealand because of health concerns.

Another component of Roundup is more toxic than the active ingredient however it is not required to be tested nor is the breakdown product. Regulations do not require it. The identity of the so-called "inert" ingredient which makes up 99.04 % of Roundup is considered a trade secret and only Monsanto knows what it is or what its health effects are.

So how harmless is Roundup? Since there are more questions than answers about it, a vinegar spray, Safer brand Sharpshooter, a flamer or just plain hand weeding, would be the wiser choice for weeds instead of Roundup. In a larger landscape situation, a Gravelly, corn gluten application or a steamer could be used.

Discussion of Survey Findings

These findings indicate a relatively widespread use of multiple pesticides and indicate the need for better management of pesticide use in Cape Cod schools.
Currently, no law requires Integrated Pest Management (or IPM) to be applied within municipal or town school districts. There is no requirement that parents, guardians, employees or children be notified prior to pesticide application in or outside of schools, nor are they asked for their consent. Pesticides may legally be applied while children are in school. School personnel, regardless of training, may now apply some pesticides both inside and outside schools. Most parents have no knowledge when their children's school has been treated with pesticides. Warning signs are often not placed when rooms or school grounds are posted. Finally, records of pesticide applications are close to impossible to access and are harbored in a variety of locations within a district. Some districts keep no records.

Integrated Pest Management Policies

The good news is that there is a way off the toxic treadmill. Concerned about the adverse health effects of pesticide use, some schools have adopted a new approach to pest control that encourages ecological, instead of chemical, solutions to insect, weed, and rodent problems. Integrated Pest Management (IPM) is based on three principles:

1. The highest priority is the safety of people;

2. Prevention is better than toxic solutions;

3. Weeds and pests are not significant problems until they exceed certain threshold populations.

The adoption of these IPM policies is recommended by the United States Environmental Protection Agency, the American Lung Association, The National Parent Teachers Association among others. Implementation of IPM policies by school systems is spreading across the nation.

- Eugene, OR; San Diego, Berkley, San Jose, Fresno, CA; Dade Country, FLA; Oak Park, IL; Athens & Cleveland Heights, OH; Paradise Valley, AZ; and others too numerous to mention, have all adopted IPM policies for their school buildings and grounds.

- Legislation has been passed in Texas and Michigan and most recently , in Connecticut, which requires schools to have IPM policies and programs in place. Here in Massachusetts, the Lexington school district has been practicing IPM since 1990 and the city of

Newton and town of Marblehead are currently transitioning to IPM for all municipal buildings and grounds, including schools.

- Harvard University has also practiced IPM for years.

- Last year by executive order, Gov. Cellucci mandated IPM for all state facilities.

IPM strategies have been found to be both affordable and effective. The success of these programs demonstrates that IPM is a practical option for all schools.

IPM practices decrease the pests' access to necessary food, water, and habitat. Routine monitoring is an important feature of the program. Physical solutions, such as structural repairs or barriers, are considered before chemical treatment. Pesticide applications are considered appropriate as a last resort and then only if the least toxic, least accessible to students (baits or traps indoors), and least persistent chemicals are used. Even then, children's exposure to residues is to be avoided.

Recommendations to school districts:

We recommend that the following steps be taken to reduce pesticide exposures at school.

1. A statewide program of Integrated Pest Management (IPM) should be adopted, with the goal of reducing or eliminating children's exposure to pesticides at school. IPM educational materials and workshops with hands-on experience should be offered to school personnel, including those responsible for the maintenance of the athletic fields.

2. At the beginning of each school year, parents, guardians and school personnel should be notified of the school's pest control policy.

3. Notification of parents, guardians and school personnel should take place before pesticides are used in schools.

4. Only trained and certified applicators should spray pesticides in and on school grounds.

5. A copy of the record of each pesticide application, including date, location, name of chemical used, and the material safety data sheet, should be kept in the school nurse's office or, if there is no school nurse, in an office designated by the school principal.

6. Warning labels should be posted around the treated areas of the school.

7. Schools should not be treated with pesticides while school is in session.

8. Schools should never use pesticides for merely aesthetic reasons, such as on their playing fields

Recommendations to Parents:

GreenCAPE encourages parents to work toward three specific goals:

1. The passage of the Children's Protection Act by signing the petition at the designated table and voting for it in November 2000;

2. The adoption of an IPM policy in your own school district through the PT Council or with GreenCAPE;

3. The adoption of the IPM approach everywhere-at your local church or synagogue, library, bank, post office, favorite mall-everywhere---and use IPM yourself!

References

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